Towards a model of resilience protection

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Abstract

This article asks what makes PhD completers resilient and which resilience protection factors help them complete their doctoral programme? A narrative inquiry methodology is applied to capture the experiences of eleven doctoral students who completed their PhDs in the United Kingdom. Data collected from interview conversations were analysed using resilience theory as a lens. We found that for these completers, success did not rely solely on the individual student, nor was the role of supervisors elevated, particularly for social and emotional support. Of importance was the students' family and social network, institutional context and the nature of university central services and how these were available to the completers. The study's contribution to the literature is in showing how the alignment of the completers' personal responses, environmental and social connections and institutional processes was available to build resilience, as we present a model for resilience protection in doctoral students .We hope the findings presented will be of interest to PhD students, supervisors and other academic colleagues in universities globally, as they seek insights into successful PhD completion.

Introduction

Doctoral students' attrition rates are between 40% and 50% (Litalien & Guay 2015). Considerable attention has been directed to understanding why these students withdraw from their studies (Kyvik & Olsen 2014), creating a significant knowledge about "the influence of personal, social, cultural and institutional factors in explaining a number of aspects of the doctoral experience" (Cantwell et al. 2017). Reasons for non-completion include personal experiences of emotional exhaustion and depression that are triggered by isolation, stress and low levels of intrinsic motivation. Added to these are academic dissertation difficulties, conceptual and threshold challenges, problems with the supervisor and supervision style, and poor or inappropriate socialisation with peers, along with the

pressures of real-life and finance over a long period of time, which are all known to contribute to students' attrition (Wisker et. al. 2010; Hunter & Devine 2016; Levecque et al. 2017).

However, less research attention has been paid to the perspectives of successful PhD completers which is an important area for further exploration to inform the practice of PhD students, supervisors and universities alike. Gaining a PhD is not easy and Mowbray and Halse (2010) identify a need for PhD students to be "resilient, persistent and resolute in determining how to progress their PhD while balancing their other commitments" (Mowbray & Halse, Ibid. p. 657). Resilience has been defined as the mental processes and behaviours that enable an individual to overcome the potential adverse effects of stressors (Parks- Savage et al. 2018) and is a dynamic construct where the conservation of performance is maintained over a period of time (Luthans, 2002). Therefore when it comes to learning about coping with the PhD, we are alerted to the need for more information about what might help protect the resilience of the PhD student.

Almost two decades ago, Wright and Cochrane (2000) examined the factors that are influencing the successful submission of PhD theses in a British university. Their regression analysis of the submission and completion data of doctoral students over a period of 10 years revealed that there were better submission rates in sciences than in arts and humanities. However, their analysis excluded intrinsic student characteristics and institutional conditions, and did not include the subjective experiences of successful completers. Six years later, McAlphine and Norton (2006) proposed an integrative framework of factors that kept the student-supervisor relationship at the core of doctoral success. Three concentric circles showed how learning experience might be influenced by departmental, institutional and societal contexts. Later, relational and systemic factors were also shown as key factors in social work doctoral completions (Liechty, Liao & Schull, 2009).

In 2010, Wisker et al.'s UK study of students and supervisors in Humanities, Social Sciences, Education, Arts and Health found that the doctoral learning journey incorporated "ontological, epistemological, emotional and professional development thresholds, as well as cognitive shifts in understanding" (p. 13), which they present as being closely interlinked and connected to the PhD students' emergent academic identity. In subsequent years, Wisker et al. have continued to explore aspects of PhD student wellbeing, stress and resilience in education. They were able to demonstrate how PhD supervisors' own personal development commitments, burnout and lack of time for their own work have had an impact on their capacity to support PhD students. (Wisker & Robinson, 2012; 2013; 2016). In this line of thought, Sorensen (2016) proposed that a set of factors, known as I-determinants (i.e. interest, incentives, ideas, initiative, integrity and interpersonal relationships), may be necessary for successful doctorates in medicine. Recently, Posselt (2018) explored the influence of faculty mentoring on doctoral students within STEM disciplines. In this US based study, Posselt found that academic progress at doctoral level is leveraged through a faculty support that was characterised by academic, psychosocial and cultural dimensions. She highlighted the importance of an institutional culture that helped students by "viewing difficulty and failure as normal, by promoting a growth mind set, and by validating their competence and potential" (p. 988). Posselt's work suggests that institutions, which create such learning environments, may enable students to uncouple the challenges of doctoral study from their perceived ability to succeed, which could be important for completion.

These works raise important questions about the relationship between different university environments, disciplines and modes of study, and how these influence individual doctoral completions. As doctoral supervisors ourselves, we understand that there is no such thing as a typical PhD student. Cantwell et al.'s (2017) work highlighted the role that learners' individual differences may have played in their programme completion. Yet, as Wisker et al. write in relation to their UK study of PhD student learning (from a sample of students who were yet to complete their studies, including international, national, part time, full time, and those undertaking professional or traditional doctoral routes) "the diversity of backgrounds, contexts and programmes made the collection of data and analysis complex – yet despite this diversity, there were many similar issues and learning experiences that emerged" (Wisker et al., 2010, p. 13). Although our understanding of doctoral students' issues and learning experiences continues to expand, what makes some students more able to sustain their PhD studies is not yet fully known. Therefore, as researchers that are engaged in supervision, we wanted to learn more about the learning experiences of successful PhD students. We sought to capture the retrospective narrative of the PhD journey from doctoral completers. Sharing their stories here, we identify several factors that might facilitate PhD students' success. We believe that the findings presented will be of interest to PhD students, supervisors and other academic colleagues seeking insights into PhD completion.

Research Question

Our research question is, what makes PhD completers resilient and which resilience protection factors helped them complete their doctoral programme? We answer the question by exploring, with successful PhD students, their experience of completion. We seek to illustrate how these completers coped, so that a richer understanding of the factors that enabled them to succeed could emerge. As the literature indicates that completing a PhD requires the capacity for persistent and sustained coping with challenges over a duration of time, we begin with the literature of resilience. Using resilience theory as a lens, we explore perspectives on the current contribution of resilience and resilience protection factors in addressing the challenges involved in doctoral education. Then we continue to share our narrative inquiry design - a methodology of studying people's experiences (Clandinin, 2013). Drawing on Clandinin and Connelly (2000) as a guide, we understand human experience as a three dimensional construct that consists of (1) a *Place dimension* – both internal for example the inner self and those that are external to the self that shape one's experience; (2) a *Temporality dimension* - the past, present and future in which something is experienced, and (3) a *Sociality dimension* - the physical, cultural, social, familial and institutional conditions that nurture it. We then establish how these factors collectively contribute and create a resilience protection context that helped our participants to succeed.

Conceptual Context: Resilience

Individual resilience is a frequently studied concept in psychotherapy, social psychology, sociology, engineering and more recently management and education. It has become a mainstream term in

policy and political dialogue. The origins and definition of the construct of resilience in the literature have been contested (Mohaupt , 2009) who notes that it was probably used first the 1940s in social psychology . Further since Block and Kremen in 1966,there has been a debate on the extent to which resilience has a genetic component and to what extent it can be learnt during life. Tugade and Fredrickson (2004) suggested individual resilience is the ability to bounce back from negative emotional experiences, and flexible adaptation to the changing demands of stressful experiences. From a psychological perspective individual resilience is something that can be learnt (Shin et al. 2012). Beginning with Garmezy in 1991, scholars, such as Cicchetti & Garmezy 1991, Luthans, (2002) Rogerson & Ermes 2008, Southwick et al. 2014, and Kiziela et al. 2019, among others, have defined resilience as a positive adaptation, despite the experience of significant adversity or trauma. These definitions suggest some kind of emotional or other state is regained or maintained, with the over-riding implication that such a state enables a return to, or maintenance of, desired functioning (Author, 2016). Thus resilience encompasses both recovery of performance after 'trauma', and the maintaining of performance over time under conditions of adversity and constant change. Within education there has been recent exploration of context specific resilience that of educational or academic resilience. Martin (2013) defined this as the capacity to overcome adverse effects which could threaten a student's educational progress. Educational resilience researchers have attempted to develop resilience measurement tools or scales, although this remains at an early stage in education (Cassidy, 2016) and does not directly relate to the PhD student experience. However as we continue to look further at what makes one resilient, an emphasis on individual resilience in the literature is not without its' critics. They argue that such approaches ignore the social and cultural factors that may create the circumstances that require resilience in the first place. Scholars, such as Garrett (2016) and Harrison (2013) among others, have argued that many studies attempt to individualise resilience, whilst ignoring the social structures and barriers that perpetuate adversity. Researchers have argued for examining resilience in a broader context of the social and institutional systems that create adversities (Cooper, 2014). For example the effects of gender discrimination (Magano,2011) racial discrimination (Chen, Szalacha, and Menon 2014) and poverty (Jenson et al.2013). They highlight that in order to promote resilience in individuals, the systemic deficiencies that create barriers, traumas and adversities need to be recognised and addressed (Richardson, 2002). There is also an emergent literature which critiques the incorporation of mainstream psychological resilience theory by public institutions .Those critics argue that drawing on the psychological characteristics of "coping with less and thriving" enables neo –liberal practices (free market economic values) to flourish in public services. Key elements include cutting back resources and making individuals responsible for their own support and well-being or blaming them if they cannot cope (Gill and Orgad, 2018).

What Makes One Resilient?

A significant stream of literature has focused on identifying the individual factors that makes a person resilient (Van Breda, 2018). Constructs such as self-efficacy (Bandura, 1982) that is the belief in one's ability to succeed, have been seen to differentiate resilient individuals from others. Researchers have explored predictors of resilience in individuals, including age (Patel, Flisher, Hetrick & McGorry, 2007), ethnicity (Allen & Lee, 2001), parenting (Herbers et al. 2011), family contact and support (Werner & Smith, 1992), poverty (Kanevesky, Corke & Frangkiser, 2008), and exposure to trauma (Corzine et al. 2017), as well as home, community and peer environment, and goal setting (Dias & Cadime, 2017). For some researchers, it is through this process of prediction that individuals

with low levels of resilience can be identified, supported and protected to cope with adverse conditions (Edwards, Catling & Parry, 2016). There is in general an optimistic view of the inner potential of risk resistance and recovery in individuals. Garrett (2016, p 1914) notes that despite the differing resilience conceptulisations, across most of the resilience studies undertaken, there has been consensus in terms of the following: The significance of resilience as a "dynamic unfolding" (Garett, 2016, p 1915) over time rather than a one off occurrence. Emphasis on the positive assets of people in a set of circumstances, and a concern with the significance of the exposure to adversity and outputs across a context specific group, namely people in similar situations. Finally most studies share a concern with the internal and external protective factors, these being the conditions that can mitigate or remove the individual's response to the challenge or the hazard faced (Rutter, 2006).

Studies that emphasise resilience protective factors, within the broader resilience literature, have been on the rise (Dias & Cadime, 2017). We include as protective factors, personal factors such as self efficacy (Bandura,1982) and the personal desire to meet a goal (Resnick, 2014) along with memories of past experience of coping (Luthar & Cicchetti, 2000).The environmental protective factors of emotional help received from the family (Pilling, 1990) are important, as are social factors such as the opportunity to develop self-esteem and efficacy through valued social roles with friends in a supportive society (Elder & Caspi, 1987), sharing similar cultural beliefs (Werner & Smith, 1992) and positive peer relationships (Fergusson & Horwood, 2003, White, Philogene, Fine, & Sinha 2009). Other studies have cited what we have termed professional factors including meaningful work (Call, 1996). These protection factors have been identified in the general resilience literature. However to augment knowledge on doctoral students' resilience, there is still a need for research on which protective factors can help doctoral students' resilience during the adversity faced on a doctoral programme.

Resilience Protective Factors and Doctoral Students

PhD student resilience can be understood as the "acquisition of skills that enable students to become more assertive, confident, resilient, persistent and resolute in determining how to progress their PhD while balancing their other commitments" (Mowbray & Halse, 2010, p. 657). When it comes to protective factors, doctoral students' circumstances and performance expectations co-exist with the students' external personal life events, pedagogical relationships and those within university infrastructures. However, the literature that explores the importance of a broader resilience context (which includes personal, environmental, social, professional, institutional, and societal contexts) in the lives of successful doctoral completers is limited. Devos et al.'s (2017) comparative study of doctoral student completers and non completers found that what was important for completion was a feeling of making progress with a manageable amount of stress on a topic they could understand. In their study, the role of supervisors was important, although with their peers it was less so. However, the researchers suggest that more work was needed to ascertain, further, the significance of other social and environmental factors that could both sustain or diminish continuation. When it comes to learning about coping with the PhD, and what might help protect the resilience of the PhD student, Wisker et al.'s research on thresholds and transition (2010) states that one of the reasons that PhD students were dissatisfied with their supervisor was when they were not given sufficient emotional support. However, there are difficulties in judging what support to offer to the doctoral student and when (Murphy, Bain & Conrad, 2007). For example, the supervisor may extend an offer of personal support when the student actually requires

help with research skills (Deuchar 2008). Pearson and Brew (2002) found a considerable difference in supervisor's perceptions of their role and practice in their Australian study. Whilst Hopwood (2010) cautions a reliance on the institutional default position of placing the supervisor(s) as central in doctoral student education, suggesting this ignores other relationships, including family, peers, friends and other university advisors. As we continue, the presented research literature forms the backdrop to our study design.

Narrative Inquiry, Study Design, Methods and Analysis

We are doctoral supervisors working in two different universities in England, UK. Both of the universities, whilst growing their PhD student programme, have a major focus on teaching undergraduate students. We use a narrative inquiry approach (Clandinin & Rosiek, 2007) to study individuals' experience, and present the 'stories both the living and telling' of doctoral completers (p. 42). Narrative inquiry is a way of understanding and inquiring into experience, and it has been increasingly used in education, health and psychological research (Reissman, 2008; Gergen, Josselson, & Freeman, 2015). In this approach, stories or narratives are viewed as expressions of meaning-in-context. A personal narrative is "meaning-making through the shaping of experience; a way of understanding one's own and others' actions; of organizing events, objects, feelings or thoughts over time (in the past, present and/or future)" (Chase, 2018, p. 549). Therefore, a narrative is understood to include the key elements of lived experience, such as characters, plot, and time. In this study, our participant's narrative concerns their challenges, and how they made sense of them, and what helped them overcome their challenges and in what contexts. As narrative inquirers, we were a brief part of their ongoing lives, as they were retold and relived.

Sample

The doctoral students in the study were identified via each universities' doctoral programme office (6 from one university, 5 from the other) and then invited to participate in our research. All participants were in disciplines where the formal model of supervision was that of the individual student and two supervisors, as opposed to research group supervision. As the universities are growing their PhD programmes, the sample size was 11 because at the time of the study these were the number of recently successful (within one year of the PhD award) students available to interview. A table of participant characteristics follows below.

(Insert Table 1 here).

Data collection

We obtained full ethical approval from both institutions in the study. As narrative inquirers, we used interviews as a method to collect stories (Ciandinin, 2013, p. 45). Each author undertook the interviews in the co-author's university, and we did not interview our own PhD students. We invited participants to tell stories about their own experience of doctoral success, as a means to understanding how they made sense of their journey. Our conversations were not guided by a predetermined interview schedule, as our purpose was to create a space for "the stories of both participants and researchers to be composed and heard" (Ibid). We used the same interview prompts, which included the following topics: the PhD journey in general, highlights experienced, challenges faced, and strategies used to manage the adversities they encountered. Both the authors

were aware of the three-dimensional narrative inquiry space - time, place and sociality - that shaped the ongoing dialogue which we recorded. Each conversation took approximately an hour and the digital recordings were transcribed verbatim. The transcripts were analysed and interpreted to portray how the doctoral completers made meaning from their experience.

Data Analysis

The analysis of data was guided by the research question which is, what makes PhD completers resilient and which resilience protection factors helped them complete? Following analytical procedures proposed by Clandinin, (2013) as a guide, we read the transcripts. We focused on the language used and the context of the conversation in the retrospective narratives to highlight both the macro and micro factors that shaped their experience. We preserved participants' voices – a hallmark of the narrative – in our analysis. We focused on each account in its entirety and integration among its parts, rather than on discursive or thematic parts (Josselson, 2011). We were able to capture where in their PhD journey they struggled or found strength (place), when they were faced with challenges and how they responded (temporality), and what familial, institutional, and societal conditions (sociality) helped them cope. These are set out in Figure 1 below. Finally, we have selected extended story excerpts for display. In Figure 1, we have mapped the dimensions of narrated experiences as they emerge in our analysis. We present our findings next, beginning with place, and continuing with temporality and sociality dimensions.

(Insert Figure 1 here)

Findings

Place Dimension of Resilience Narratives

We captured in the place dimension where in their PhD journey the doctoral learners struggled or found strength. Therefore in the place dimension there is an inner space related to the self, a social space which concerns the doctoral learners' family and social relationships and life challenges, and an external space which incorporates the challenge created in meeting the academic milestones required by the university of study.

All of the participants described their emotional vulnerability during the completion of their thesis. They shared with us, when and where they had discovered this vulnerability beginning with academic demands.

Emotional vulnerability facing academic demands (Inner Space – the self)

The process of constant reading and assessing material for content was difficult. We heard of their frustration with the duration and level of decision making required about content inclusion and grappling with evidence. The time taken and what seemed like an enormity of work is described here by Lucas who was comparing literature from other countries. Lucas confides a sense of being overwhelmed as the intellectual demands drained his energy:

"You realise that things won't happen within a few hours, sometimes it's a few weeks away, to get a simple example. The volume of work is enormous and other things like language issues, although I

can get by with some French and some German, it went into Italian and Russian. I couldn't do what I hoped to do" (Lucas).

In addition to the emotional strain of academic demand, self-doubt was expressed and was a common feature among these completers. Participants shared with us a lack of confidence and self-doubt in their ability at points in their studies.

Self-Doubt (Inner Space)

Abbi described how this worked for her:

"You are dealing with multiple things, you need to ensure you are doing the academic work to the right standard and also not just the right standard but also sufficient for the pace you should be moving at, so I did struggle with that for quite a while. I thought I am not doing enough work based on the timelines so then it becomes a challenge and I am thinking maybe I just can't do it. Plus you have lots of other things that are getting in the way while you try and figure it out, and it is challenging in sort of how you get the work done as a person, but also it is challenging in terms of the amount of work you are trying to achieve in a particular time frame, and you want it to be a really high standard and high quality" (Abbi).

Accepting Uncertainty (Inner Space)

Completers believed that accepting the uncertainty of the PhD experience was important for their success. Here, Sonya reflects on dealing with the emotionally unsettling and uncertain nature of doing research:

"I realised fairly early on that what I was writing, and anything else I've written up to this point, things will be changed in light of my findings, so I accepted that early on. It made me more prepared to send things for review by my supervisor, which were not complete, so, for example, this is how much I've done. It's a bit rough, but I know it's a working document and I think that helped. The feeling that nothing was complete instead of feeling that this discrete chapter that I've been working on is not complete and won't be touched ever again and then being told it's not really going to work. Having it in my mind that I was open to change helped. I accepted that quite early that was the case" (Sonya).

For some participants this process was not always easy nor was overcoming these emotional responses to academic work the only obstacles they faced. Major personal life setbacks occurred as part of their personal relationships and family life events and are a feature of the Social space:

Personal Relationships and Personal Life events (Social space)

These took place over the duration of the PhD study and also impacted on the participants. We heard personal stories of experiencing a divorce, illness, financial problems and job loss. Participants recalled how those experiences occurred simultaneously with other academic milestones in their journey yet they had kept going, whilst there were also formal points of scrutiny:

Academic milestone challenges (External space)

Billie describes her feelings about the upgrade examination: *"I took a bit longer than a year to get ready for that, it was one of the stressful times for me because it's that thinking around this is important for the programme are you proceeding or not, it's a deal breaker. I fully understand the point of it and yes I could do it, but it was the nervousness around well if this doesn't go well, this is really terrible, and then it brings you back to all those reasons for why you wanted to be here in the first place, and all of that, and if I don't proceed with this then what's the point. So you have all of these thoughts around oh gosh and that does tend to take a bit of energy away from what you are meant to be doing around the work* (Billie).

Equally and understandably, completion and the final examination was highlighted. For with success came celebration, despite the emotional impact felt along the way and described here as pain by Sonya:

*"Ah the end of my studies it turned out to be good and that technically wiped away or made me forget the pain - I wouldn't call it easy what I went through"(*Sonya).

We turn now to the temporal or time related narrative.

Temporal Dimension of Resilience Narratives

The temporal dimensions of the study are concerned with how during their programme, the completer's engaged with their past experience, their present or current experience and what was to be their future experience. From the beginning of their studies, gaining a PhD had been very difficult, and our study completers had drawn upon a range of strategies from their past and present experiences to sustain them. They had also looked to the future and their opportunities post completion as incentivisers to continue and complete. These temporal or time related dimensions commence with the past experience and continue to the present and future.

Past Experience

In the sample, everyone had held other jobs in various organisations, and ten participants had arrived at their respective university as an active response to changing work, career path, or via a rejection elsewhere. Having learnt methods of coping previously, they had drawn on these past situations, their memories of coping to help them continue with their PhD.

Memories of Coping (Past)

Such memories of a past experience of successful coping had been helpful in doing the PhD. Notably, work experience (in a range of jobs from shop work to project managing and consultancy) was frequently cited as helping the participants mitigate against overwhelming situations and facilitating their coping. Sophie captures how this helped her with research skills:

"I worked in private industry as a project manager and I think that was great training for being a doctoral researcher. Having worked on multiple complex projects at the same time and being able to do this gave me a different way of looking [at] how I wanted to move forward from an academic perspective" (Sophie).

Whilst George had found his previous working experience helpful at his viva, and he recalls that

“there were the internal and external and the chair and it just became like a conversation, and I think it's because I've been in a work conversation like that myself, almost like having a coffee with a couple of work colleagues at some point. It wasn't as intimidating as I thought it was going to be” (George).

Aside from work experiences, some of the completers had used other forms of stress relief that had worked for them in the past including sport. Additionally participants explained how during their studies in what had been their present experience they had accessed the university or institutional support. The present experience follows next.

Present Experience

Institutional support (present)

Participants reported access to physical resources, such as sharing laboratory space and technical assistance, which helped them move ahead. The PGR office administrative support was also helpful as a source of information along with postgraduate (PGR) development events offering shared research education and training. Additionally, the supervisory relationship emerged as another narrative strand in our analysis. However, there were points of difference in the role of supervisors. Here participants are referring to supervisors as a source of ongoing academic and research support.

The Supervisor Role (present)

Participants told us about the scholarly and expert subject input where the role of a supervisory team was significant:

“Every supervision was something that helped me feel more focused back onto how I can move the project forward. As we progressed through the years, it was great and good to have those professional and theoretical discussions. I found supervisions really helpful” (Rhianna).

Changes in supervision teams and the variability and stability of supervisors and teams created significant challenges for students, as Miles recollects:

“*I had two first supervisors, one who became ill and had to discontinue, and then a new director of studies. The second supervisor, she was good. The new director of studies he stayed and left literally I think when I handed in. He wasn't there at the viva so my second supervisor was there”* (Miles).

The level of interest of supervisors was also noted by Abedi:

“*There were a lot of key players. Initially I had a different supervisor who was dropped. I don't think he was that interested in my work. I know that as I had a supervision once and he was doing other work under a piece of paper, and I thought I'm not interested, if you don't want to support me, I’m prepared to do my part, it's a relationship. I understand supervisors have other commitments and so on. So the supervisors I found they weren't challenging me or my perception of the doctorate – however that changed once the original supervisor left and I had a different one”*(Adebi).

Many studies have highlighted the importance of the student-supervisor relationship for PhD success; however, in this study, we became aware of the nature of that relationship and how it was perceived by the completers, as Abbi relates,

"I had good (academic) support within the university particularly from my supervisors, that expertise is really important. I can't imagine how difficult it would be if you didn't get on with your supervisor or if they were difficult to get hold of or unsupportive about your research"(Abbi).

Abbi continued to describe how supervisors are key determinants of doctoral students' well-being at particular points in time. For her, this was because the supervisor feedback and opinion affected her emotional feelings about the PhD in a relationship with her supervisor linked to meeting performance requirements. Predominantly, it was the view of the participants that it was not the job of supervisors to protect them emotionally and offer social support during a doctoral programme. The supervisor, whilst important, was about theoretical and academic guidance. Here George describes the supervisory relationship:

"*They gave us deadlines, we give them time to read our work, they give it back, we organised meetings, sat down and discussed it, then move onto what's next. That's sort of how it worked"* (George).

Supervision was viewed retrospectively as only one part of the bigger picture, and supervisors were not the only ingredient to gaining a PhD or in sustaining study at times of adversity. Completing the PhD and how it would contribute to a positive future was also an important aspect, one kept in mind as the completers grappled with the challenges faced.

Benefits of PhD (Future)

In pursuit of obtaining a place on a doctoral programme, and in completing the study, Tobi had the future in his mind and kept the future benefits of a PhD in mind:

:

"*I think what got me through it is knowing I'm doing everything I possibly can. The only thing in my power is getting the PhD done, so it's a sense of power that I have control over so let's go and get it, I'm not going to get that job without my PhD, a good PhD is a completed PhD"* (Tobi).

Equally other social connections and institutional environments were important in helping participants to stick with their studies. We offer some story excerpts from the sociality dimension, next, to explore these aspects of support further**.**

Sociality Dimension (environmental, social and institutional contexts) of resilience narratives

The sociality dimension consists of the environmental, social and institutional contexts. The opportunity to talk through, and share with other people their PhD challenges from a range of different perspectives, was impactful for the completers, beginning with family.

The Family Environment

Familial relationships and members of the family environment were identified by all participants as both significant supporters and in offering reminders of what the person could achieve. George describes how this support has worked for him:

"*My grandmother- we sort of have conversations about what's going on and she's been really helpful for me in helping me think about continuing. It's a reminder that maybe I should just work on the next chapter and see how things go"* (George).

Equally significant were those friends, developed or maintained, in a network of support outside of the university.

Friends

These were people who were not involved in the participant's research life. Adebi valued the support friends provided in sustaining her studies. She notes how her friends are supportive of her studies, whilst being also aware of the impact on her mental health:

"They are not doing PhDs, they are outsiders and they know me because they are my friends and they are supportive of what I'm doing. They know I want to do this and whatever conversations we are having about how we resolve this so that you can finish this and you can also be well as a person. So thinking about the bond is very useful" (Adebi).

Friends proved to be important as a group who shared other interests beyond the PhD. Although to sustain their studies, participants cultivated a network of support across other dimensions of their lives, within their universities. Such networks included colleagues.

Colleagues

Colleagues connected to university academic life were identified as having been a vital means of support. George had appreciated this connection and observed that

"*One lecturer within the department who hadn't long finished their PhD knew exactly what it's about and we could grumble about similar things. By talking it through with colleagues I think you can help to put it in some sort of perspective and actually it makes you realise other people have gone through similar parts on their journey"* (George).

The university's strategic role in facilitating emotional as well as educational infrastructure support for PhD students was also highlighted by the completers. The level of emotional and mental health support available was noted by Tobi who appreciated the emotional support that the university wide social events for PhD students had offered:

"We had coffee mornings when we got together and talked over different things and I think that should be encouraged more. Every couple of weeks you have an informal get together to talk about research or anything different. That helps with those issues and mental support then" (Tobi).

However, Sophie explored with us the available but often hidden nature of the university support on offer for PhD students. Talking about this with us, she concludes,

"*I think the PHD journey is lonely and a journey of self-doubt sometimes. I really am mindful that people tend to leave because of their emotional wellbeing. Its acknowledging that it's okay to feel that life is tough and the university here is supportive in a way. Though it's often just a given [fact] that PhD students have the knowledge that there are people who can help them with their emotional wellbeing. Mental health issues, its tough balancing the important urgent stuff, so I think that's another area the university should consider making more noise about. We think about students but I think doctoral students are as important but don't have the same access to or maybe the perception that they can access the same services as undergraduates. Our university bread and butter is undergraduates and PhDs don't bring in as much money – yet they need as much emotional support and wellbeing"* (Sonya).

Completers told us that the university strategic services were available to offer social and emotional support. They were an important element of the sociality dimension of doctoral resilience. However, these services could have been better publicised for PhD students. Therefore, in concluding this section on the social dimension of the PhD journey, we note that there was a mixed set of expectations about what supervisors and the wider university could offer completers in terms of social and emotional support. Family, friends and colleagues had a key role to play, as Miles summarises:

"I had my personal networks of friends and family and there was the academic network and university support as well. It's almost like having different types of support from different sides, it comes together and it helped me overcome some difficult points" (Miles).

Discussion

Our analysis drawing on the procedures of Clandinin,(2013), enabled the findings presented above. We have captured where the completers of the study personally struggled or found strength on their PhD journey (place), when they were faced with challenges and how they responded (temporality), and what familial, institutional, and societal conditions (sociality) helped them cope. The findings show that for the PhD completers in this study there are four factors which are important to protect resilience and sustain study. These are personal factors -the capable but vulnerable PhD student. Environmental factors being the family and the completer's community and networks. Professional factors incorporating the supervisory relationship and finally Institutional factors which includes university support. To the completers all of the distinct four protective factor areas were important. Each has the potential to offer a positive impact on PhD success. However for these successful PhD students , the four factors came together and were inter-related as they navigated their PhD programme over time. Our findings confirm that of other studies exploring the Doctoral student experience which suggest that individual resilience alone is not sufficient for doctoral completion (Mowbray and Halse, 2010). More generally the resilience protective factors identified in this research have all been identified in other studies of resilience exploring responses to adversity in other contexts. However a new contribution to the literature is made as we have identified the four factors required by PhD completers in the PhD programme context. Further we draw attention to the alignment of all the four factors and how success depends on the establishment of a clear but complex alignment between the personal, family, social and academic relationships they navigated. Participants had learnt to manage their own personal emotions and access support through a number of different social relationships from their family,

friends and colleagues. Significantly for these completers, the best use of the supervisor was that of a facilitator of expert professional guidance and performance outcomes – not as a provider of personal support. Furthermore, their learning had involved viewing the role of the university and the academic relationships in it, as one in which the PGR department was constant and available, whilst other departments, who could play a very significant part in assuring their continuation of studies, required an effort to access. The model in Figure 2 below shows which factors can combat adversity and influence PhD completion in the completers' lives.

(Insert Figure 2 here)

The Model

Our model has four distinct separate diamonds and a central shared diamond. The four distinct and separate diamonds show the four protective factor areas of : (1) Personal factors -the capable but vulnerable PhD student, (2) The environmental factors being the family and the completer's community and networks. (3)Professional factors incorporating the supervisory relationship and finally (4) Institutional factors which includes university support. To the completers in this study all of the distinct four protective factor areas shown by the four separate diamonds were important. Each has the potential to offer a positive impact on PhD success. However in the centre of the model a shared diamond marks where all of the four factors come together and are inter-related. Illustrating visually how for these successful completers all four of the completers' personal , environmental, professional and institutional factors were important in order for them to be used positively to create a resilience protecting context for PhD completion as shown in Figure 2. Finally the outer circle with a dotted line represents temporality and the dynamic nature of events (Past and present and future) in the completer's experience**.** We continue to discuss these four factors next, beginning with the individual PhD student.

Personal Factors : The Individual PhD Student Capable yet Vulnerable

Participants in this study told us that they knew success had to start with themselves and their ongoing responses to the uncertainty of research work. The personal resilience protection factors were important as they were aware that factors, such as self-belief (Bandura, 1982) and motivation to succeed created by thinking of the benefits of the PhD, could help them achieve doctoral success. All of our participants, despite their capability and willingness to be an agent of their own progress, had also demonstrated an acceptance of their self-doubt. However, they identified a set of key elements that linked their personal strategies for coping, notably both from their past and present memories of other difficult experiences they had previously had and overcome (Luthar & Cicchetti, 2000), and their previously held personal stress-reducing activities, such as engaging in physical exercise. Our study confirms a range of factors conceptualised as important for successful doctoral completion in our literature review, including a manageable amount of stress and making progress (Devos et al. 2017) and good interpersonal relationships (Sorensen, 2016).

Environmental and Social Factors : Family and Community

For our group of completers, there was an understanding and recognition of the synergy between their other personal resources of family, friends and colleagues, and their support mechanisms, and

what they could offer them as environmental resilience protection for completion. This would support the observations of Pearson and Brew (2003) who suggest that too much emphasis is placed on the supervisor role in PhD support, and that other relationships may well offer more beneficial forms of support to maintain studies. We are aware, however, that families can create stress as well as alleviate it (Herbers et al. 2011), and for PhD students, family pressure created through finance or personal difficulties (Wisker, 2010) may mean that this form of support is fractured. Interestingly, all the completers, here, also had two other social relational forms of resilience protection: a distinct group of friends outside of their university - factors cited as important to protect resilience by Fergusson and Horwood, (2003); and colleagues within the university, an important set of people to gain emotional support from, should a family contact be less available or the very source of the emotional upset.

Professional Factors : Supervisory Relationships

Shared with us and noted in other studies as impacting on the participants' PhD experience, were a change in supervision teams, and uncomfortable conflicts arising from personality clashes and the nature of the research work (Pearson & Brew, 2002). Of interest is that participants, here, set less emphasis on supervisory relationships for social and emotional resilience protection than in some of the literature, for example Wisker (2010) and Devos (2017). Instead they had established what they could expect and needed from the supervisor based on professional protection factors such as support for academic performance and feedback. Whilst this may sound like the relationships were very transactional, it may well have been effective personal management, as they had looked to and built other social relationships for support outside of the supervisory relationship (Pilling, 2000). Therefore, where supervisory teams had changed the impact, whilst noted as a stressor, did not result in a significant loss of academic input, because the new supervisor had filled the gap and continuation was maintained. An equally significant element is that any loss of personal or emotional support created by supervisor changes was mitigated, as this type of support was still available to them in the other relationships they had created with their family, friends and community (Masten & Coatsworth, 1998, Fergusson & Horwood, 2003)**.**

Institutional Factors : PhD students' emotional, academic and other infrastructure support

The study confirms the significance of departmental and institutional contexts, as posited by McAlphine and Norton (2006) in their integrative framework. Our completers experiences are of interest in terms of the way the universities in the study offered PhD students' emotional, academic and other infrastructure support. The completers, here, had been able to access emotional wellbeing support services, as they had required them despite their universities' focus on undergraduate students. Academic or research training was noted as helpful and a designated PGR department had provided this. Finally, for other infrastructure resources such as lab space and equipment – this was again dependent on the completers' ability to negotiate with individuals or departments that were serving a wider university population. What is significant is that completers had been capable of navigating these differing services and get their needs met and maintained.

The Four Protection Factors

Sharing PhD completers' experiences of their studies, we have depicted how personal responses, environmental, social and institutional factors were required to build resilience protection. We offer

a new perspective on the components of a resilience-protecting context for PhD students. One in which the emphasis is not on the individual student's ability to cope, nor where the role of supervisors is elevated, particularly for social and emotional support. The completers were journeying with their families, colleagues and friends negotiating different institutional contexts, that of their own postgraduate research culture and central services. They coped over time and succeeded.

For other universities, offering a PhD development environment that provides an easier to navigate learning and support function and resource for graduate and postgraduate learners may be helpful. Equally the inclusion of the PhD student's families, friends and colleagues may strengthen the resilience protection context of their students as they work towards doctoral success. We hope that our findings and the stories told by the participants can offer insights that may be useful to other PhD students, supervisory teams and universities.

Limitations

This paper has some limitations. In the sample, the role that participants' national and cultural contexts played was not explored because they were not the focus of this study. However, this focus may be important when international students' resilience protection is considered. We draw attention to some of the gender, social class and racial barriers that remain in some contexts and institutions, that critics of resilience have explored in the wider resilience literature. Furthermore, as we focus on doctoral completers, we did not interview supervisors or other institutional stakeholders. Future research with institutional stakeholders' and supervisors' perceptions of resilience protection factors might reveal more nuanced descriptions of resilience-protecting contexts.

Conclusion

The aim of this study is to understand what makes the successful doctoral completers resilient and what factors help them complete their candidature. We explored with 11 completers their experiences of their PhD. As we did so we found that they had drawn on their immediate context of self, family, community, supervisors and supporting institution to protect them. By recognising how and when to use and bring together the four factors of personal , environmental, professional and institution they had navigated both the performance linked milestones and the various affective, academic, and life challenges they faced over the time of their candidature. From the completers' narratives, we have presented a preliminary model of protective factors. As we conclude our paper, we hope that our findings, and the model of resilience protection in doctoral students, are helpful and can act as a point of useful discussion for PhD students and all those involved in PhD student achievement and support.

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